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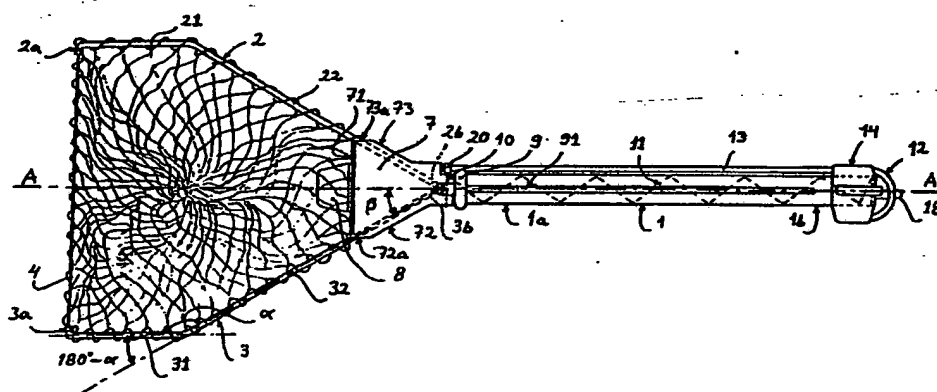
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: LANDING NET



(57) Abstract

Landing net comprising a tubular handle (1), rods (2, 3), a rope (4) connecting the ends (2a, 3a) of the rods and a net (5) arranged to be suspended from the rods and the rope. At their other ends (2b, 3b) the rods are connected to an expansion spring (6) whereby the rods and the net are spread out into working position. In transporting position, the rods and the net are pushed inside the handle. Each rod (2, 3) is formed of two preferably straight rod sections (21, 22; 31, 32) which form an obtuse angle (α) with respect to each other. At the end of the handle (1) there is arranged a cavity (7) which is spread out on one plane in an angle (β) with respect to the lengthwise axis (A-A) of the handle, the angle (β) being roughly of the same size as the complementary angle ($180^\circ - \alpha$) of the angle (α) formed between the two rod sections of each rod (2, 3). The handle is provided with a guide slot (91) located in the lengthwise direction of the handle, into which guide slot there is fitted the pin (10) connected to the rod ends and to the expansion spring. The pin (10) is also attached to a shifting lever (9) which is used for opening the landing net into working position and respectively for folding it into position. Inside the handle (1) there can be arranged a sliding spring (11) whereby the opening is carried out automatically. The landing net handle is provided with a lifting hook (12) which has a shaft (13) of the same length as the handle. The lengthwise direction thereof by means of the fixing and control member (14) attached to the end of the handle.

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LANDING NET

The present invention relates to a landing net comprising a tubular handle, rods, a rope or the like connecting the first free ends of the rods and a net which is suspended from the rods and the rope, wherein the other ends of the said rods are attached to an expansion spring whereby the rods and the net are opened to working position, and wherein the said rods and the net can be pushed within the handle while in transporting position. The invention also relates to a landing net provided with a lifting hook.

Fishermen use the landing net and/or the lifting hook for landing the caught fish from water. Generally the landing net and the lifting hook are separate pieces of fishing tackle. Landing nets are composed of a handle, a net attached to the end of the handle and the net frame. Normally they are in the form of fixed and uniform objects, which makes their transport and use troublesome.

In the prior art there is known for example a landing net with a handle that can be bent shorter and a net provided with collapsible rods which are also bent alongside the handle while in transporting position. However, in order to prepare this kind of landing net for operation or to open it, both hands and several motions are required of the fisherman. It is obvious that the net may get entangled if the landing net must be opened quickly.

The Finnish Patent No. 53182 and the Swedish Publication Print No. 300067 introduce a landing net wherein a net suspended from a frame is arranged at the end of a tubular handle. The frame is formed of two rod members and a spring or equivalent member joining the rods, which rods are fitted within the tubular handle. The end of the tubular



handle is tightened so that the rods do not slip out of the handle tube. Between the tips of the rods there is attached a rope or the like which also partly suspends the net. The rods, the rope and the net can all be pushed inside the tubular handle. However, in order to open such landing nets and to prepare them for operation, it is still necessary that the implement is gripped with both hands so that the net can be pulled out of the tubular handle.

10 In the prior art there is also known a landing net resembling the above described implements, the said landing net comprising a handle whereinto the rods and the net attached thereto can be pushed. The rods and the net are pushed out by means of a trimmed spring which is released by utilizing a suitable lever.

Among the drawbacks of the above described landing nets can be pointed out the effective area of the net opening framed by the expanded rods or equivalent depends on the length of the rods and generally remains comparatively small. This again is due to the fact that the length of the said rods is limited by the length of the handle, which is best to keep comparatively short so that the landing net will be easy to handle, for instance.

25 Another remarkable drawback is that the nets of the described landing nets are generally pushed inside the handle together with the rods or the like. In that case it is not altogether certain that the net is prepared for operation quickly and without entangling.

30 In the prior art there are known lifting hooks which are bendably attached either onto a separate shaft or onto the landing net handle, at the opposite end with respect to the net. The disadvantage of the lifting hook of this type is



that the bending of the hook into working position takes up a lot of space owing to the swinging motion of the hand. Moreover, the lifting hook shaft is generally straight in form, wherefore it is difficult to get a solid grip of the shaft.

The object of the invention is, among other things, to eliminate the above described drawbacks and to achieve a collapsible landing net and lifting hook combination which is simple in structure and secure in operation. This is achieved by the novel features of the invention, enlisted in the appended patent claims.

Among the advantages of the invention, the following are pointed out. The landing net is quickly prepared for operation, even while using only one hand in the task. The net opening has a large area although the shaft is comparatively short. On the other hand, a landing net provided with a short handle is easy to handle. The net does not get entangled because it is stored within the expanded cavity arranged at the end of the handle and because the net in transporting position can be attached to the rod members placed within the said cavity. It is pointed out that it is particularly simple and easy to arrange a release spring within the handle of a landing net of this type; a place for the net is reserved outside the handle proper, i.e. within the said expanded cavity.

The lifting hook joined to the landing net is prepared for operation by means of a swift pulling motion. The expanded cavity of the handle serves for preventing the hands from sliding while using the lifting hook.

In the following the invention is described in detail with reference to the appended drawings, where



Figure 1 is a top-view illustration of the landing net of the invention in working position;

Figure 2 is a front-view illustration of the landing net according to Figure 1;

5 Figure 3 is a top-view illustration of the landing net in transporting position, presented in partial cross-section;

Figure 4 is a side-view illustration of the landing net in transporting position, presented in partial cross-section; and

10 Figure 5 is an illustration of the landing net with the lifting hook pulled out.

The landing net of the invention comprises the tubular handle 1, the rods 2, 3 attached thereto, the rope, string or equivalent flexible member 4 connecting the first free ends of the rods and the net 5 which is arranged to be suspended from the rods 2, 3 and the rope 4. The other ends of the rods 2, 3 are coupled to the expansion spring 6 whereby the rods and the net are spread out into working position. The rods 2, 3 can be pressed together and pushed, along with the net 5, inside the handle 1 during transportation or storage.

25 Each rod 2, 3 is formed of two preferably straight rod sections 21, 22 and 31, 32 which are placed at an obtuse angle α with respect to each other. The rod material can be for instance steel wire with a diameter of about 5 mm, which is chromium-plated or protected from corrosion by some other conventional method. Each rod 2, 3 is thus bent in an obtuse angle α to form two rod sections 21, 22 and 31, 33; the size of the obtuse angle α is roughly 140°-160°, preferably 150°. The rod sections located on the side of the free ends 2a, 3a are shorter than the sections located on the sides of the ends 2b, 3b connected to the

35



expansion spring 6. The ratio between the short rod section 21, 31 and the long rod section 22, 32 is 1:5 - 1:2, preferably 1:3.

5 At the end 1a of the landing net handle 1 there is arranged the cavity 7 or similar expansion space which is spread out on one plane forming an angle β with respect to the lengthwise axis A-A of the handle 1, the angle β being roughly the same as the complementary angle $180^\circ - \alpha$ of the
10 angle α between the rod sections 21, 22 and 31, 32 of each rod 2, 3, i.e. $\beta = 180^\circ - \alpha$. The length of the cavity 7 in the direction of the handle 1 is determined according to the length of the short rod section 21, 31. In transporting position the rods 2, 3 are placed crosswise within the
15 handle 1 and the cavity 7 (Figure 3), so that the short rod sections 21 and 31 rest adjacent to the opposite walls 72 and 73 of the cavity, the length of the said walls thus roughly corresponding to the length of the short rod sections. The diameter of the handle can also be taken into
20 account and accordingly the cavity can be somewhat shortened, as is seen in Figure 3.

On both sides of the mouth opening 71 of the cavity 7, on the opposite walls 72, 73, there are formed the guide slots
25 72a, 73a, wherealong the rods 2, 3 are arranged to slide while the landing net is being spread out or folded in. At the mouth 71 of the cavity 7 there is fitted the flap door 8. By means of this flap door 8 the cavity 7 can be at least partly closed in order to keep the net 5 inside the
30 cavity 7, between the short rod sections 21, 31, during transportation.

In this case the expansion string 6 spreading out the landing net rods 2, 3 is a spiral string. Therethrough is
35 fitted a pin 10 or the like which is arranged in a



transversal position inside the handle 1. The ends 2b, 3b of the rods are respectively provided with enlargements 23, 33 and the pin 10 is arranged to pass through them. The ends 61, 62 of the expansion string 6 are profitably
5 attached to the rod sections 22, 32 adjacent to the enlargements 23, 33. The pin 10 is movably fixed, by means of the screws 10a, 10b, into the guide slots 91, 92 running in the lengthwise direction along the handle 1, which guide slots are extended from the back end 1b of the handle as
10 far as the front end 1a and the cavity 7.

The shifting lever 9 is coupled, either by one or both of the screws 10a, 10b to the pin 10 and thereby further to the rods 2, 3. By utilizing the shifting lever 9, the rods
15 2, 3 and the net 5 which are pulled inside the handle 1 can be pushed out into working position (Figure 1) and respectively pulled in into transporting position (Figure 3).

20 Within the handle 1 there can also be arranged a sliding spring 11 in between the interconnected ends 2b, 3b of the rods 2, 3 and the back end 1b of the handle. Thus the first end of the sliding string 11 rests for instance against the expansion string 6 and the pin 10, or against a shoulder
25 arranged in connection to them, and the second end of the sliding string 11 rests against the back wall of the back end 1b of the handle 1.

It is profitable to provide the above described landing net
30 with a lifting hook 12 which comprises a shaft 13 which is preferably of the same length as the handle 1. The lifting hook 12 is arranged to move in the lengthwise direction of the handle 1, i.e. parallel to the axis A-A. For this purpose, among others, there is arranged a fixing and
35 control member 14 at the back end 1b of the handle 1. The lifting hook 12 can be manufactured of the same material as the rods 2, 3.



The fixing and control member 14 comprises two apertures 15, 16 parallel to the axis A-A and suitably positioned on both sides thereof; the shaft member 13 of the hook is fitted to move in the first aperture 15, and the second aperture 16 is arranged to serve as a safety guard. The point of the lifting hook 12 can be placed within the safety guard, i.e. the aperture 16, when the hook 12 is not in use, i.e. when the hook is in rest position. At the end of the fixing and control member 14, parallel to the handle 1, there is also arranged the locking device 18 which ensures that the lifting hook 12 remains in rest position. In that case the free end of the hook shaft 13 is pushed into the slot 19 located at the back of the cavity 7. The arrester catch 20 prevents the lifting hook from sliding out of the fixing and control member while the hook 12 is pulled out into working position.

Owing to its structure and attaching members, the lifting hook 12 is kept solidly in position on the handle 1 of the landing net and does not disturb the use of the landing net proper. When the lifting hook 12 is needed for lifting the fish, the rods 2, 3 and the net 5 are pushed inside the handle 1. Now the hook 12 can be quickly pulled out along the handle 1 as far as the arrester catch 20 and thereafter turned 90° so that it is ready for use as is seen in Figure 5. It is pointed out that while employing the hook, the cavity 7, i.e. the expansion space, helps to get a solid grip of the handle 1.

The above described fishing implement functions as follows. It hangs from the angler's belt by means of the hook 21 until the fish catches the bait and is pulled for instance beside the boat. The landing net, provided with the sliding spring 11, is gripped with one hand and spread out by pushing the release lever of the spring (not



presented in the drawing), so that the rods 2, 2 and the net 5 are automatically pushed out of the handle 1.

Respectively, in the case where the landing net is not provided with a sliding string, the shifting lever 9 is

5 manually shifted from the back end 1b of the handle 1 as far as the front end 1a, so that the net is spread out. Now the landing net is in working position and it can be used for lifting the fish into the boat in the same fashion as an ordinary landing net. After using the net, the rods 2, 3
10 and the net 5 are placed back inside the handle 1 and the cavity 7 by pulling the shifting lever 9 to the back end 1b of the handle 1. If the fish is exceptionally big, the landing net is turned around and the lifting hook 12 is pulled out and employed for lifting the fish up into the
15 boat.

In the above specification the invention has been explained with reference to one preferred embodiment only, but it is naturally clear that the invention can be modified in many
20 ways within the range of the appended patent claims. The rod members, for instance, can also be slightly arched providing that they can be fitted within the handle 1. Instead of the sliding spring, other known pushing mechanisms can also be used, such as a suitably trimmed
25 multifilament rubber string.



PATENT CLAIMS

1. A landing net comprising a tubular handle (1), rods (2, 3), a rope (4) or the like connecting the first free ends (2a, 3a) of the rods and a net (5) which is arranged to be suspended from the rods and the rope and which rods (2, 3) are at their other ends (2b, 3b) connected to an expansion string (6) whereby the rods and the net are spread out into working position, and which rods and net can be pushed inside the handle (1) for transportation or storage of the landing net, characterized in that each rod (2, 3) is formed of two preferably straight rod sections (21, 22; 31, 32) which are bent to form an obtusive angle (α) with respect to each other, and that at the end of the handle (1) there is arranged a cavity (7) or equivalent expanded space which is spread out on one plane so that it forms an angle (β) with respect to the lengthwise axis (A-A) of the handle (1), the angle (β) being roughly of the same size as the complementary angle ($180^\circ - \alpha$) of the angle (α) between each two sections of the rods (2, 3).

2. The landing net of claim 1, characterized in that at the sides of the mouth opening (71) of the cavity (7) there are located guide slots (72a, 73a), wherealong the rods (2, 3) are arranged to move.

3. The landing net of claim 1 or 2, characterized in that at the mouth openings (71) of the cavity (7) there is arranged a flap door (8) whereby the cavity (7) can at least partially be closed.

4. The landing net of claim 1, 2 or 3, characterized in that the handle (1) is provided with at least one guide slot (91; 92) running parallel to the lengthwise direction of the handle, into which slot there is fitted a



pin (10) or the like which is connected to the ends (2b, 3b) of the rods (2, 3) and to the expansion string (6).

5 5. The landing net of any the previous claims, c h a -
r a c t e r i z e d in that inside the handle (1) there is
arranged a sliding string (11) or equivalent which is
located between the interconnected ends (2b, 3b) of the
rods and the back end (1b) of the handle (1).

10 6. The landing net of any of the previous claims provided
with a lifting hook in connection with the handle (1)
thereof, c h a r a c t e r i z e d in that the lifting
handle (12) is provided with a shaft (13) which is
preferably of the same length as the handle (1) and that
15 the shaft is arrangend to move along the handle in the
lengthwise direction thereof preferably by means of a
fixing and control member (14) located at the end of the
handle (1).

20 7. The landing net according to claim 6, c h a r a c -
t e r i z e d in that at the end of the handle (1),
preferably in connection to the fixing and control member
(14), there is arranged a safety guard (16) whereinto the
point (17) of the lifting hook (12) can be placed.

25 8. The landing net of claim 7, c h a r a c t e r i z e d
in that in connection to the fixing and control member (14)
there is arranged a locking device (18) in order to lock
the lifting hook (12) into rest position.

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FIG. 1

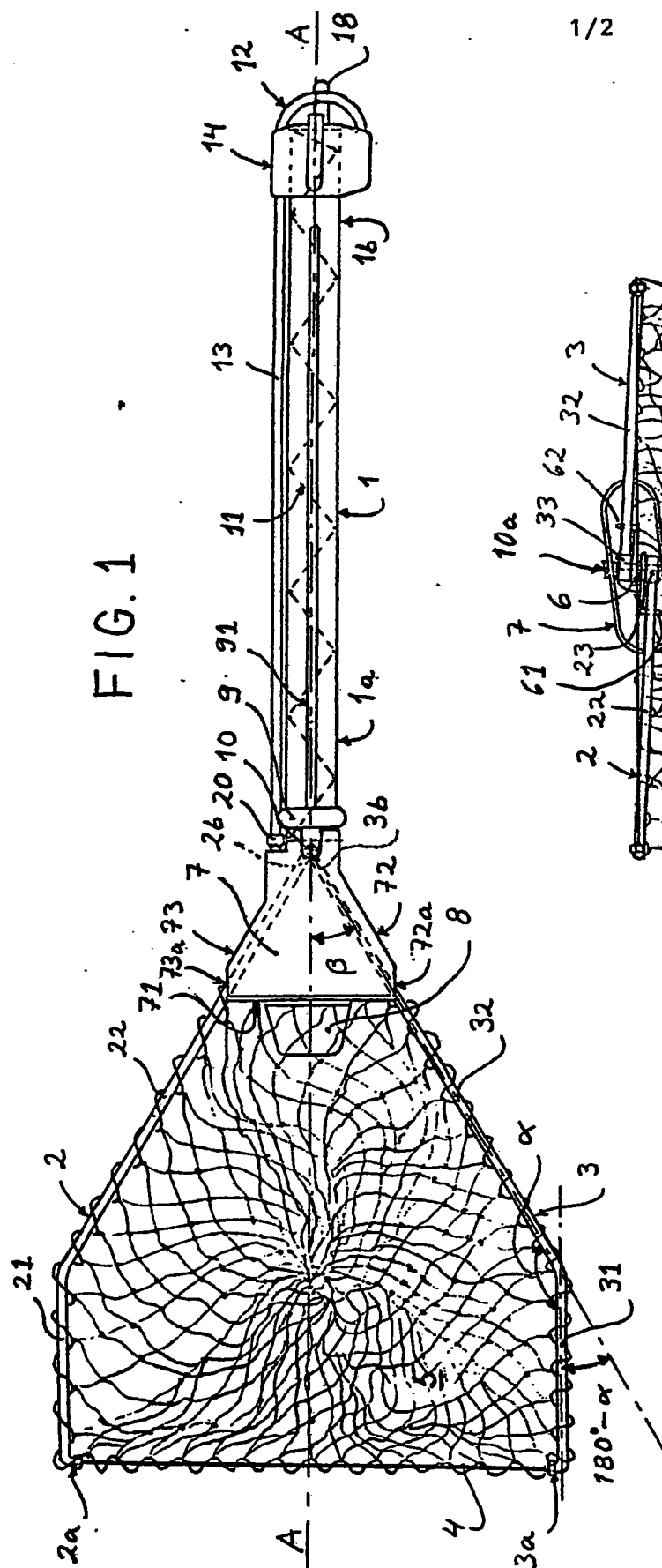
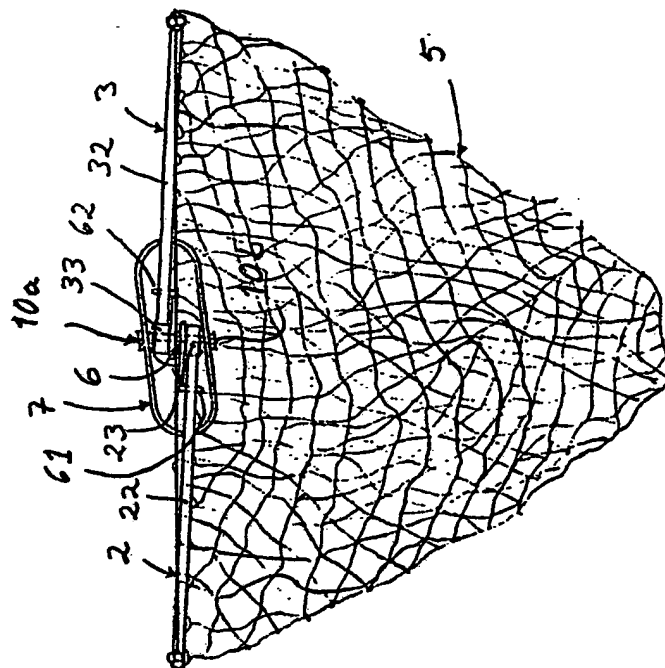
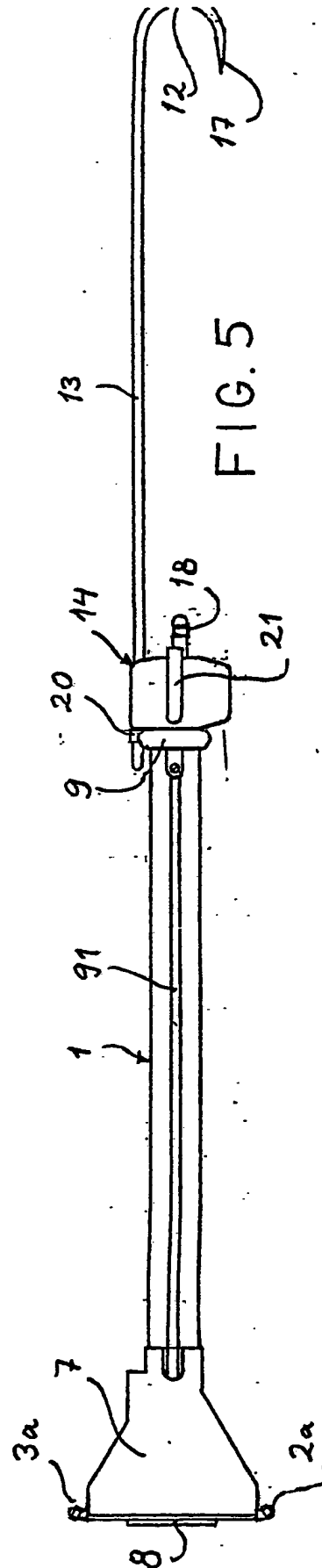
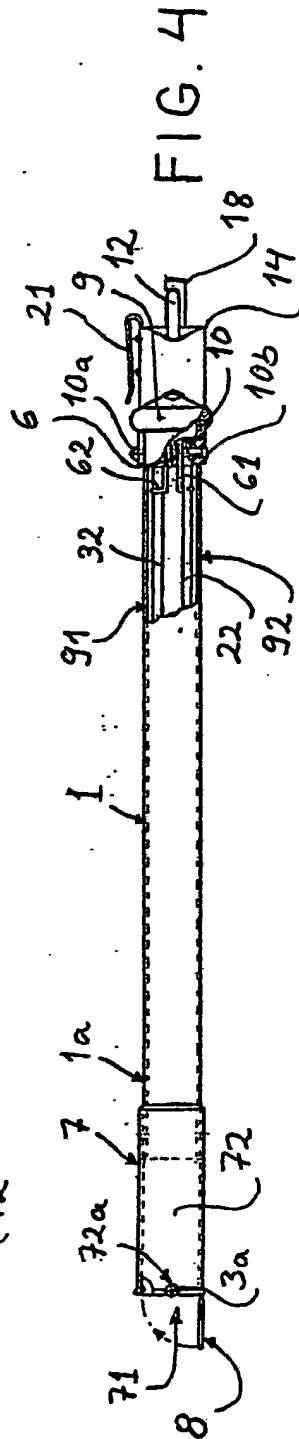
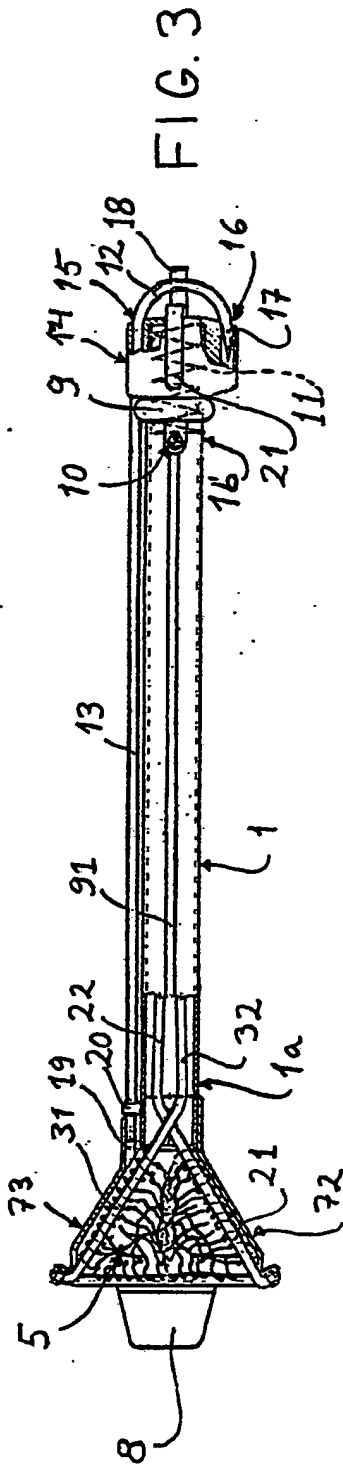


FIG. 2





INTERNATIONAL SEARCH REPORT

International Application No **PCT/FI84/00080**

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³ According to International Patent Classification (IPC) or to both National Classification and IPC ⁴ <div style="margin-top: 5px;"> A 01 K 77/00 </div>																															
II. FIELDS SEARCHED <div style="text-align: center; margin-top: 5px;">Minimum Documentation Searched ⁵</div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 25%;">Classification System</th> <th style="width: 75%;">Classification Symbols</th> </tr> <tr> <td style="padding: 5px;"> IPC 4 National C1 US C1 </td> <td style="padding: 5px;"> A 01 K 77/00 45h:77/00 43:12 </td> </tr> </table> <div style="margin-top: 5px; font-size: 0.8em;"> Documentation Searched other than Minimum Documentation to the extent that such documents are included in the fields searched ⁶ </div> <div style="margin-top: 10px; padding: 5px;"> SE, NO, DK, FI classes as above </div>			Classification System	Classification Symbols	IPC 4 National C1 US C1	A 01 K 77/00 45h:77/00 43:12																									
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴ <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 10%;">Category ⁸</th> <th style="width: 60%;">Citation of Document, ¹⁵ with indication, where appropriate, of the relevant passages ¹⁷</th> <th style="width: 30%;">Relevant to Claim No. ¹⁸</th> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">US, A, 1 921 596 (E.C. WALTER) 8 August 1933</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-8</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">US, A, 2 619 755 (W HENSON) 24 January 1948</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-8</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">US, A, 2 653 404 (J.R. 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RAULT) 22 March 1954</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-8</td> </tr> <tr> <td colspan="3" style="text-align: center; padding: 5px;">.../...</td> </tr> </table> <div style="margin-top: 10px; font-size: 0.8em;"> <table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> ⁹ Special categories of cited documents: ¹⁶ ^{"A"} document defining the general state of the art which is not considered to be of particular relevance ^{"E"} earlier document but published on or after the international filing date ^{"L"} document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) ^{"O"} document referring to an oral disclosure, use, exhibition or other means ^{"P"} document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; vertical-align: top;"> ^{"T"} later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention ^{"X"} document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step ^{"Y"} document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. ^{"A"} document member of the same patent family </td> </tr> </table> </div>			Category ⁸	Citation of Document, ¹⁵ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸	Y	US, A, 1 921 596 (E.C. 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⁹ Special categories of cited documents: ¹⁶ ^{"A"} document defining the general state of the art which is not considered to be of particular relevance ^{"E"} earlier document but published on or after the international filing date ^{"L"} document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) ^{"O"} document referring to an oral disclosure, use, exhibition or other means ^{"P"} document published prior to the international filing date but later than the priority date claimed	^{"T"} later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention ^{"X"} document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step ^{"Y"} document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. ^{"A"} document member of the same patent family																														
IV. CERTIFICATION <table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> Date of the Actual Completion of the International Search ³ <div style="margin-top: 5px; font-size: 1.1em;">1985-01-11</div> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> Date of Mailing of this International Search Report ³ <div style="margin-top: 5px; font-size: 1.1em;">1985-01-16</div> </td> </tr> <tr> <td style="width: 50%; vertical-align: top; padding: 5px;"> International Searching Authority ¹ <div style="margin-top: 5px; font-size: 1.1em;">Swedish Patent Office</div> </td> <td style="width: 50%; vertical-align: top; padding: 5px;"> Signature of Authorized Officer ¹² <div style="margin-top: 5px;"> Kerstin Boije Janson </div> </td> </tr> </table>			Date of the Actual Completion of the International Search ³ <div style="margin-top: 5px; font-size: 1.1em;">1985-01-11</div>	Date of Mailing of this International Search Report ³ <div style="margin-top: 5px; font-size: 1.1em;">1985-01-16</div>	International Searching Authority ¹ <div style="margin-top: 5px; font-size: 1.1em;">Swedish Patent Office</div>	Signature of Authorized Officer ¹² <div style="margin-top: 5px;"> Kerstin Boije Janson </div>																									
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L.E.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No ¹⁸
Y	FR, A6, 67 221 (A5 1 059 069) (A. RAULT) 25 November 1957	1-8
Y	FR, A, 2 493 675 (P. CAPRINI) 14 May 1982	1-8
Y	FR, A, 2 515 482 (SA RUDIPECH) 6 May 1983	1-8
Y	DE, A, 814 680 (R L E DELCEY) 2 August 1951	1-8
Y	GB, A, 1 249 298 (I M J L CHINN) 13 October 1971	1-8